

ABSTRACT OF THE DISCLOSURE

Solid Catadioptric Lens with a Single Viewpoint

A solid catadioptric lens with a single viewpoint has a
5 spherical refractive surface with a center C on an optical
axis of the lens. An ellipsoidal reflective surface of the
lens faces the spherical refractive surface such that a first
focus F_1 of the ellipsoidal reflective surface is coincident
with the center C of the spherical refractive surface.
10 Furthermore, the lens has a shaping surface facing the
ellipsoidal reflective surface for shaping a light that
passes the single viewpoint. The shaping surface can be
refractive, reflective or semi-transparent and its shape can
be ellipsoidal with its first focus F_1' coincident with the
15 second focus F_2 of the ellipsoidal reflective surface. The
single viewpoint of the lens is at the center C of the
spherical reflective surface and is enforced with an aperture
that can be positioned at various points inside, on a surface
or even outside the lens, depending on the type of shaping
20 surface chosen.